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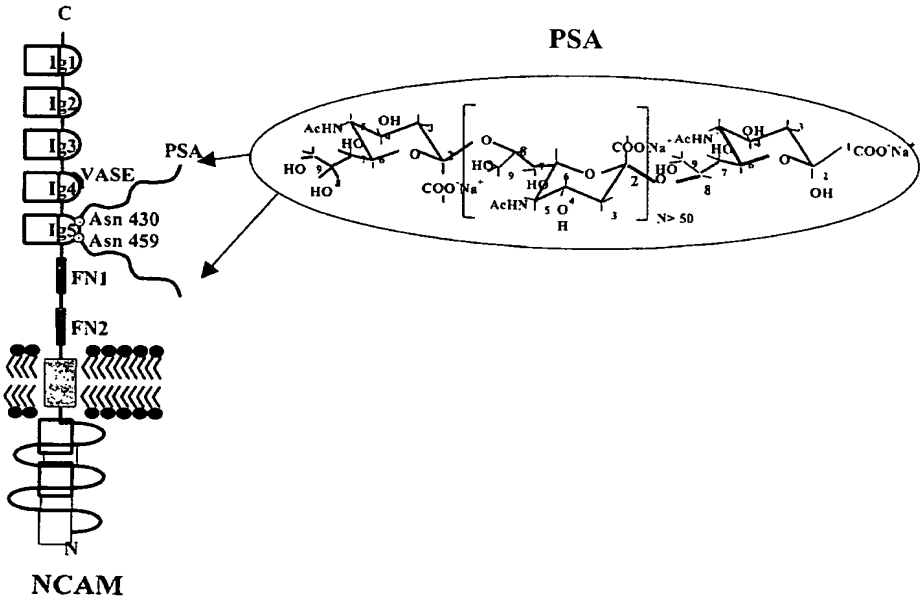
[Continued on next page]

(54) Title: USE OF POLY-ALPHA2,8-SIALIC ACID MIMETIC PEPTIDES TO MODULATE NCAM FUNCTIONS.



(57) Abstract: The invention relates to the use of a peptide consisting of 5 to 30 amino acid residues, preferably 9 to 15, most preferably about 12 amino acid residues, said peptide comprising a B epitope of a poly-α2,8 sialic acid attached to NCAM, which is recognized by an anti-poly-α2,8 sialic acid (PSA) antibody, for the preparation of a medicament for modulating NCAM functions, to be administered for the prevention and/or the treatment of neurodegenerative diseases, brain and spine lesions, age-related learning and memory problems, and cancer.

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ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Inter[redacted]l Application No
PCT/[redacted]03/05108

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K7/08 C07K7/64 C07K7/00 C07K1/04 C12N15/09
C12N5/10 A61K38/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07K C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, SEQUENCE SEARCH, CHEM ABS Data, BIOSIS, MEDLINE, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SHIN J S ET AL: "Monoclonal Antibodies Specific for Neisseria meningitidis Group B Polylsaccharide and Their Peptide Mimotopes" INFECTION AND IMMUNITY, AMERICAN SOCIETY FOR MICROBIOLOGY. WASHINGTON, US, vol. 69, no. 5, May 2001 (2001-05), pages 3335-3342, XP002228383 ISSN: 0019-9567 Abstract; p. 3336, col. 1, "Production of MAbs"; p. 3336, col. 2, "Production of phage clones expressing the mimetopes"; p. 3337, col. 1, "DNA sequencing of phase peptide motif"; p. 3341, Table 4. ---	1-23
A	WO 98 08874 A (CHIRON CORP) 5 March 1998 (1998-03-05) p. 5, l. 25-29; Example 6. ---	1-23

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
3 March 2004	02/07/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Lopez García, F

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HURPIN C M ET AL: "BACTERICIDAL ACTIVITY OF TWO IGG2A MURINE MONOCLONAL ANTIBODIES WITH DISTINCT FINE SPECIFICITIES FOR GROUP B NEISSERIA MEINGITIDIS CAPSULAR POLYSACCHARIDE" HYBRIDOMA, LIEBERT, NEW YORK, NY, US, vol. 11, no. 6, 1992, pages 677-687, XP009004404 ISSN: 0272-457X p. 679, "Production and characterization of anti-idiotypic monoclonal antibody (mAB2) to mAB1".	1-23
A	WO 02 46408 A (FURTAK KATARZYNA;LI LI ; CURAGEN CORP (US)) 13 June 2002 (2002-06-13) p. 223, l. 20-29.	1-23
A	WO 00 54805 A (SAUK JOHN J ;UNIV MARYLAND (US)) 21 September 2000 (2000-09-21) p. 8, SEQ. ID. No. 3	7,8

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-4, 8-17, 20-23 (all partially); 5, 18 (all complete)

Peptide of SEQ. ID. No: 1, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

2. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No.: 2, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

3. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 3, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

4. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 4, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

5. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 5, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

6. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 6, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

7. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 7, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

8. Claims: 1-4, 9-17, 20-23 (all partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Peptide of SEQ. ID. No: 8, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

9. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 9, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

10. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 10, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

11. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 11, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

12. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 12, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

13. Claims: 1-4, 9-17, 20-23 (all partially); 7, 8 (all complete)

Peptide of SEQ. ID. No: 13, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

14. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 14, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

15. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 15, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

16. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 16, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

17. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 17, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

18. Claims: 1-4, 9-17, 20-23 (all partially); 6, 19 (all complete)

Peptide of SEQ. ID. No: 18, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

19. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 19, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

20. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 20, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

21. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 21, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

22. Claims: 1-4, 9-17, 20-23 (all partially); 6, 19 (all complete)

Peptide of SEQ. ID. No: 22, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

23. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 23, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

24. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 24, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

25. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 25, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

26. Claims: 1-4, 9-17, 20-23 (all partially)

Peptide of SEQ. ID. No: 26, uses and compositions thereof, polynucleotide encoding the same, recombinant vector and host cells.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1, 2, 8, 9-15, 20-23

Present claims 1, 2, 8, 9-13 relate to the use of peptides defined by reference to a desirable characteristic or property, namely that they are recognized by an anti-poly-alpha 2, 8 sialic acid antibody.
The claims cover the uses of all the peptides having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such peptides. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the peptides used by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the use of the peptides of SEQ. ID No.: 1-26.

Present claims 14, 15, 20-23 relate to peptides defined by reference to a desirable characteristic or property, namely that they are recognized by an anti-poly-alpha 2, 8 sialic acid antibody.
The claims cover all the peptides having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such peptides. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the peptides by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the peptides of SEQ. ID No.: 1-12, 14-26.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 03/05108

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1, 2, 8, 9-15, 20-23
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

nation on patent family members

Inter l Application No
PCT/ 03/05108

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 9808874	A	05-03-1998	AT	252602 T	15-11-2003
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